

ecology and environment, inc.

SITE SAFETY PLAN

Version 988

A. GENERAL INFORMATION

Project Title: Land & Lakes Landfill Project No.: N/A
 TDD/Pan No.: F05-9006-002/FIL0452SA
 Project Manager: Greg Youngstrom Project Dir.: _____
 Location(s): Joliet Rd (~2mi NE of Romeoville), Lemont, IL, 60439
 Prepared by: Scott Zimmerman Date Prepared: 4-18-91
 Approval by: Jackie Vogt Date Approved: 5-15-91
 Site Safety Officer Review: Officer SSO Date Reviewed: 5-15-91
 Scope/Objective of Work: Site Interview, Recon. Inspection, Seven (7) soil samples, six (6) monitoring well samples, three (3) sediment samples. Some soil samples will be collected at depth (2-6ft).
 Proposed Date of Field Activities: Week of May 20th May 22nd + 23rd
 Background Info: Complete ☐ Preliminary (No analytical data available) ☒

Documentation/Summary:

Overall Chemical Hazard:	Serious <input type="checkbox"/>	Moderate <input type="checkbox"/>
	Low <input checked="" type="checkbox"/>	Unknown <input type="checkbox"/>
Overall Physical Hazard:	Serious <input type="checkbox"/>	Moderate <input type="checkbox"/>
	Low <input checked="" type="checkbox"/>	Unknown <input type="checkbox"/>

B. SITE/WASTE CHARACTERISTICS

Waste Type(s):

Liquid ☒ Solid ☒ Sludge ☐ Gas/Vapor ☒

Characteristic(s):

Flammable/ ☒ Volatile ☒ Corrosive ☐ Acutely Toxic ☐
 Ignitable
 Explosive ☒ Reactive ☒ Carcinogen ☒ Radioactive* ☐

Other: Toxic, Persistent, Irritant, experimental teratogen

Physical Hazards:

Overhead ☐ Confined* ☐ Below Grade ☐ Trip/Fall ☒
 Puncture ☐ Burn ☐ Cut ☒ Splash ☒
 Noise ☒ Heat/Cold Stress ☒ Other: Sediment sampling in stream

*Requires completion of additional form and special approval from the Corporate Health/Safety Group. Contact RSC or HQ.

Site History/Description and Unusual Features (see Sampling Plan for detailed description):

See Next Page

Locations of Chemicals/Wastes: Assume entire site contaminated

Estimated Volume of Chemicals/Wastes: Unknown

Site Currently in Operation

Yes: [✓]

No: []

C. HAZARD EVALUATION

List Physical Hazards by Task (i.e., drum sampling - explosion hazard, drilling - noise hazard, etc.) and number them. (Task numbers are cross-referenced in Section D)

- Task/Physical Hazard Evaluation:
1. Site Recon. Inspection/ Trip/Fall, Noise, Heat/Cold Stress
 2. On-site soil sampling/ Trip/Fall, Noise, Heat/Cold Stress
 3. Monitoring well sampling/ Trip/Fall, Splash,
 4. Sediment sampling/ Trip/Fall, Splash
 5. Vent monitoring wells/ splash, vapor
 - 6.
 - 7.
 - 8.

Chemical Hazard Evaluation:

Compound	PEL/TWA(ppm)	Route of Exposure	Acute Symptoms	Odor Threshold	Odor Description
Polychlorinated Biphenyl ¹²⁴	0.09/0.09	Ingestion, Eye, Dermal, Inhalation	Vomit, edema, fatigue, anorexia, abdominal pain	0.0095 ppm	pleasant, buttery
PCB 1254	0.03/0.03	Ingestion, Eye, Dermal, Inhalation	irritate eye, nose, throat, edema, anorexia	0.0095 ppm	pleasant, buttery
Sodium Cyanide	12.50	Ingestion, Dermal, Skin, Inhalation	skin + eye burns, nausea, difficult breathing	—	faint + almond
Dioxins		Ingestion, Eye, Dermal, Inhalation	Chloracne, liver tox, diarrhea, headache	—	—
Dichloroethane (1,1)	100.00/200.00	Ingestion, Eye, Skin, Inhalation	drowsiness, unconscious, intoxication, disturbance	49-135.9 ppm	chloroform
Dichloroethane (1,2)	50.00/10.00	Ingestion, Eye, Dermal, Inhalation	dizzy, drowsy, uncoord, vomiting, diarrhea	26.00 ppm	chloroform-like, pleasant + sweet
Boron	22.68/22.68	Ingestion, Eye, Skin, Inhalation	vomit, diarrhea, rash, low temp, low circulation	—	—
Chromium metal	0.47/0.23	Ingestion, Eye, Skin, Inhalation	contact dermatitis, irritate eye/membranes	—	—
Lead	/0.01	Ingestion, Eye, Skin, Inhalation	stomach distress, black stools, anemia	—	—

Note: Complete and attach a Hazard Evaluation Sheet for major known contaminant.

Site Name Land + Lakes Landfill

Job No. ET1305

TDD/PAGE F05-9006-002/FIL0452SA

CHEMICAL HAZARD EVALUATION (Continued)

[illegible]

Site Name Land + Lakes Landfill
Job No. FT1305
TDD/PAM F05-9006-002/FILO452SA

→ SITE HISTORY (Continued)

The Land + Lakes Landfill site is located in Lemont, Illinois, Will County (~2 miles NE of Romeoville). The site is a general municipal waste landfill that has been open since 1973 with no permits to receive special or hazardous wastes. The site is currently active.

In the early 1980's, analysis of shredded auto body waste, which was being spread on top of the landfill to prevent blowing litter, revealed PCB's. The site has been cited numerous times for lack of daily cover + numerous other violations. Monitoring wells have been sampled regularly and had not, as of 1985 (the PA), shown contamination.

There have been numerous citizen complaints regarding the site. Local residents have complained of blowing litter, odor, after-hours dumping and landfill debris landsliding onto neighboring property. The site is alleged to have received chemical wastes, cyanide film chips and dioxins.

The site has no gas collection system and surface emissions have been found to contain 1,1 dichloroethane and 1,2 dichloroethane.

D. SITE SAFETY WORK PLAN

Site Control: Attach map, or sketch of site showing hot zone, contamination reduction, zone, etc.

Perimeter identified? Yes [] No [✓] Site secured? Yes [] No [✓]
Work Areas Designated? Yes [] No [✓] Zone(s) of Contamination Identified? Yes [] No [✓]

Personnel Protection: TLD badges required for all field personnel.

Anticipated Level of Protection (Cross-reference task numbers to Section C):

	TASK DESCRIPTION	A	B	C	D
Task 1	Site Reconnaissance			← X	
Task 2	On-site soil sampling			← X	
Task 3	Monitoring well sampling			← X	
Task 4	Sediment Sampling			← X	
Task 5	Monitoring well Screening			X	
Task 6	leachate sampling			X	
Task 7	stained soil sampling			X	
Task 8					

ALL SITE SAFETY PROCEDURES WILL BE FOLLOWED AS A MINIMUM.

Modifications: Rad-Mini >0.1 mR/hr (alarm sounds) and/or Monitox readings >0 ppm, evacuate work zone and

then call Health and Safety Staff. UPGRADE TO LEVEL "C" IF DRY + DUSTY CONDITIONS EXIST OR IF

MONITORING EQUIPMENT WARRANTS
Action Levels for Evacuation of Work Zone Pending Reassessment of Conditions: CONTACT HEALTH AND SAFETY STAFF
IF EVACUATION OCCURS.

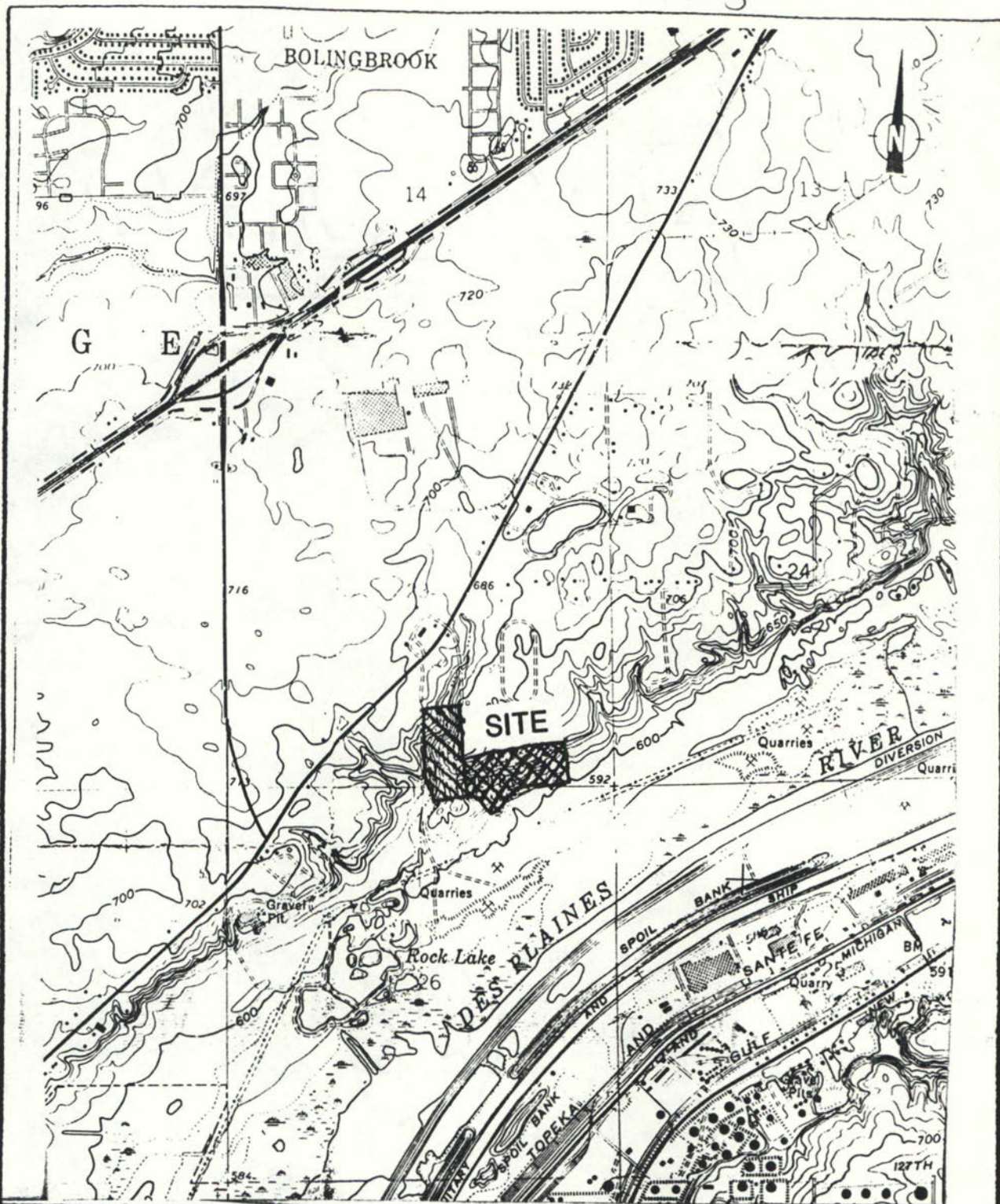
- Level D: O₂ <19.5% or >25%, explosive atmosphere >10% LEL, organic vapors above background levels, particulates >N/A mg/m³, other N/A.
- Level C: O₂ <19.5% or >25%, explosive atmosphere >25% LEL (California-20%), unknown organic vapor (in breathing zone) >5 ppm, particulates >N/A mg/m³, other N/A.
- Level B: O₂ <19.5% or >25%, explosive atmosphere >25% LEL (California-20%), unknown organic vapors (in breathing zone) >500 ppm, particulates >N/A mg/m³, other N/A.
- Level A: O₂ <19.5% or >25%, explosive atmosphere >25% LEL (California-20%), unknown organic vapors >500 ppm, particulates >N/A mg/m³, other N/A.

Air Monitoring (daily calibration unless otherwise noted):

Contaminant of Interest	Type of Sample (area, personal)	Monitoring Equipment	Frequency of Sampling
Organics	Area	OVA	continuous
HCN	area	Monitox	continuous
O ₂ /Explosives	area	O ₂ Explosimeter	continuous

Decontamination Solutions and Procedures for Equipment, Sampling Gear, etc.:

All contaminated equipment will be washed in Alconox solution + triple-rinsed with distilled water. All wash + rinse water will be left on site with prior permission of the site owner/operator.

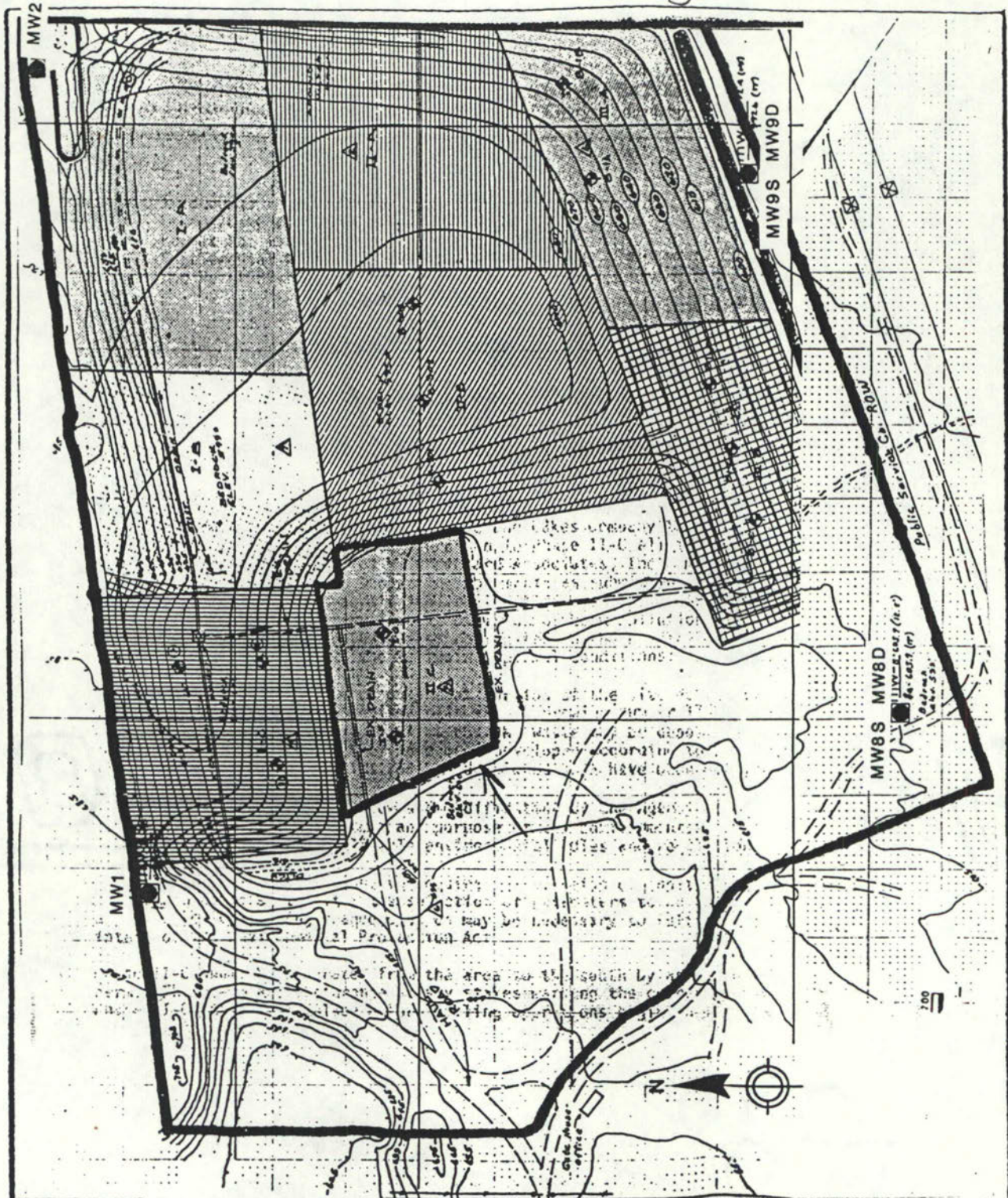



AREA COVERED
BY FIGURE 3

ecology and environment, inc.

111 WEST JACKSON BLVD., CHICAGO, ILLINOIS 60604 TEL. 212-403-4115

TITLE	SITE LOCATION MAP		FIGURE #	1
SITE	LAND AND LAKES LANDFILL		SCALE	1:24,000
CITY	LEMONT	STATE	IL	P.A.M. FIL0452GA
SOURCE	USGS TOPOGRAPHIC MAP		DATE	1962
			REVISED	1973



 MONITORING WELL	ecology and environment, inc. <small>911 WEST JACKSON BLVD., CHICAGO, ILLINOIS 60604 TEL. 312-463-8416</small>	
	TITLE	FIGURE #
	MONITORING WELL LOCATION MAP	3
	SITE	SCALE
	LAND AND LAKES LANDFILL	UNKNOWN
CITY	STATE	P.A.N.
LEMONT	IL	FIL0452GA
SOURCE	DATE	
SITE FILE	REVISED	

Personnel Decon Protocol: A two wash tub system will be used. The first tub will be used to decontaminate clothing (gloves, boots + suits) in Alconox solution. The second tub will be the rinse tub using distilled water.

Decon Solution Monitoring Procedures, if Applicable: N/A

Special Site Equipment, Facilities, or Procedures (Sanitary Facilities and Lighting Must Meet 29 CFR 1910.120):

Hearing protection will be worn as needed. Safety instruments will be used when samples are collected. Team members will take precautions against slipping or falling near lake. A rope will be used if the lake is too deep. Site safety procedures will be followed at a minimum.

Site Entry Procedures and Special Considerations: Permission will be obtained prior to site entry. Stay upwind of contamination when possible. The buddy system will be maintained at all times.

Work Limitations (time of day, weather conditions, etc.) and Heat/Cold Stress Requirements:

Work is restricted to daylight hours only and workers are to be monitored for heat/cold stress.

When vermiculite is used to pack samples, dust masks will be worn.

General Spill Control, if applicable: N/A

Investigation-Derived Material Disposal (i.e., expendables, decon waste, cuttings):

Investigative-derived materials will be decontaminated in accordance with procedures listed above. The decontaminated material will be bagged and left on-site in appropriate waste containers with prior permission of site owner/operator.

Sample Handling Procedures Including Protective Wear:

After samples have been collected, the outside of the sample bottles will be decontaminated by washing (not submerging) the bottles in an Alconox solution and rinsing in distilled water. The protective clothing level (i.e. suits, gloves, boots) worn during on-site job activities will be maintained while decontaminating the bottles. Respiratory protection will be worn based on professional judgment. Latex gloves, at a minimum, will be worn, while handling the bottles after decontamination.

Team Member

Responsibility

Breg Youngstrom

Cliff Florczak

Debbie Hallock

Pat Muldowney

Addison Crag-Chaderton

Mark Wheeler

Bob Crevengros

Team Leader

Site Safety Officer

Sampler

Team Member

Team Member

Team Member

Team Member

*All entries into exclusion zone require Buddy System use. All E & E field staff participate in medical monitoring program and have completed applicable training per 29 CFR 1910.120. Respiratory protection program meets requirements of 29 CFR 1910.134, and ANSI Z88.2 (1980).

E. EMERGENCY INFORMATION

(Use supplemental sheets, if necessary)

LOCAL RESOURCES

(Obtain a local telephone book from your hotel, if possible)

Ambulance Para-Care Ambulance, Joliet (815) 744-4357 or Kurtz Ambul. Serv., Joliet (815) 722-1900
Hospital Emergency Room Bolingbrook Medical Center, 400 Medical Center Dr., Bolingbrook, IL, (708) 759-2300
Poison Control Center Rush-Presbyterian-St. Luke's Hospital 1-800-942-5969
Police (include local, county sheriff, state) Lemont Police Dept. (708) 257-2226 or non-emerg (708) 257-2229, Will County Sheriff (815) 727-6191 (Joliet), IL State Police (815) 726-6291 (Joliet)
Fire Department Lemont Fire Dept. (708) 257-2221 or non-emerg (708) 257-2376
Airport Frankfort Aviation Service, Frankfort, IL (815) 469-2311
Agency Contact (EPA, State Local USCG, etc.) TOM Crause 217-782-6761
Local Laboratory N/A
UPS/Fed. Express Fed. Ex. 1-800-340-0887 HRS: 0800-2030
Client/EPA Contact U.S. EPA: Alan Altur 312-886-0390
Site Contact Jim Ambroso 708-825-5000

SITE RESOURCES

Site Emergency Evacuation Alarm Method Verbal
Water Supply Source FIT will supply it's own water
Telephone Location, Number To be determined prior to site entry
Cellular Phone, if available N/A
Radio N/A
Other N/A

EMERGENCY CONTACTS

1. Dr. Raymond Harbison (Univ. of Florida) (501) 221-0465 or (904) 462-3277, 3281
Alachua, Florida (501) 370-8263 (24 hours)
2. Ecology and Environment, Inc., Safety Director
Paul Jonmaire (716) 684-8060 (office)
Non-responsive (6)
3. Laura D. Evans, Regional Safety Coordinator, Chicago (312) 663-9415 (office)
Non-responsive (6)
4. Jerry Oskvarek, Office Manager, Chicago Non-responsive (6)
5. Lou Adams, TAT Leader, Chicago (312) 201-3790 (office)
Non-responsive (6)
6. Tom Kouris, ATATL, Chicago Non-responsive (6)

HS018A(01/16/91)

MEDTOX HOTLINE

1. Twenty-four hour answering service: (501) 370-8263

What to report:

- State: "this is an emergency."
 - Your name, region, and site.
 - Telephone number to reach you.
 - Your location.
 - Name of person injured or exposed.
 - Nature of emergency.
 - Action taken.
2. A toxicologist, (Drs. Raymond Harbison or associate) will contact you. Repeat the information given to the answering service.
3. If a toxicologist does not return your call within 15 minutes, call the following persons in order until contact is made:

- a. 24 hour hotline - (716) 684-8940
- b. Corporate Safety Director - Paul Jonmaire - Non-responsive (6)
- c. Assistant Corp. Safety Officer - Steven Sherman - Non-responsive (6)
- d. Chicago Health & Safety Manager - Laura Evans - home - Non-responsive (6)

EMERGENCY ROUTES

(NOTE: Field Team must Know Route(s) Prior to Start of Work)

Directions to hospital (include map) Exit site west to Route 53 (~3/4 mi away). Travel North on Rt. 53 past Highway 55 to Lily Cache Lane (~1 1/2 mile). Turn left (W) on Lily Cache Lane. Follow Lily Cache to Schmidt Rd (~1 mile). Turn left (S) on Schmidt. Follow Schmidt to Medical Center Drive. Turn left (E) on Medical Center Drive. Bolingbrook Medical Center is on the left. Total distance = ~4 miles.

Emergency Egress Routes to Get Off-Site: Exit site to west on site access road.

HS018A(06/11/90)

Bolingbrook Medical Center
400 Medical Center Dr.
Bolingbrook, IL
(708) 759-2300

HOSPITAL ROUTE MAP
LAND & LAKES LANDFILL

PG 1 OF 1

FIL0452SA

Barbers
Corners

BOLINGBROOK

LILY CACHE LANE

HOSPITAL (APPROX.)

MEDICAL CENTER DRIVE

Total
Distance
D 24 miles

SCHMIDT RD.

FIL0452SA

SITE

DES PLAINES

Valley View Sch

Rock Lake

SHP

SANTE

TOPEKA

GULF

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AND

Ecology and Environment, Inc.
Hazard Evaluation of Chemicals
Region V - Chicago

DATE : 4/18/91
JOB NO: FT1305

CHEMICAL NAME: Boron

SYN : Elemental Boron
CAS NO: 7440-42-8
DOT CLASS:
FORMULA: B

CHEMICAL PROPERTIES

Phys St: Solid Boil Pt: 4022.00°F Ionz Pot: — FI Pt: —
Mol Wt: 10.80 Melt Pt: 4172.00°F Vap Press: 1.00 mmHg LFL: —
Sp Gr: 2.45 Frz Pt: 4172.00°F Odor Thr: — UFL: —
Odor :
INCOMPAT/REACT: strong oxidizers, halogens, sulfur, water, ammonia, nitro compds.
SOLUBILITY : insoluble

TOXICOLOGICAL PROPERTIES

Exposure Limits: TLV-TWA (ACGIH): 22.68 ppm PEL (OSHA): 22.68 ppm
STEL: — IDLH: —

OTHER PROPERTIES : Exposure Limits Listed are for Boron Oxide.
Tox Data: INHAL :
DERMAL :
ORAL : mouse: LD50: 2000mg/kg
CARCIN :
MUTAGEN :
REPRO TOX:
AQUATIC :
OTHER TOX: TARGET ORGANS: Skin, Eye, Resp Sys, Kidney
ROUTES OF EXP: Ingestion, Eye(Ocular), Skin Contact, Inhalation

PERSONAL PROTECTIVE MEASURES

RESPIRATORS : APR: dusty/windy condit or known high concent or >1 but <5ppm; SCBA: >5ppm
CARTRIDGE TYPE : GMC-H or AP3 (RACAL)
PROTECTIVE CLOTHING: Coverall: Tyvek Gloves: Butyl
SPEC PRECAUTIONS : Severe fire & explosion hazard

FIRST AID

INHALATION: move to fresh air, give O2/CPR as nec, SEEK MEDICAL ATTENTION
EYE/SKIN : flush w/water for 15 min. SEEK MEDICAL ATTENTION
INGESTION : SEEK MEDICAL ATTENTION IMMEDIATELY.

SYMPTOMS

ACUTE : CNS depressant which causes vomiting, diarrhea, depressed circulation, body rash, low body temp.
CHRONIC: dermatitis, kidney damage

DISPOSAL, FIRE, SPILLS (see attached sheet)

DISPOSAL: P FIRE: 1,2 LEAKS & SPILLS: 3,4,6-9
DECOMPOSITION PRODUCTS: toxic boron fumes

REFERENCES CONSULTED

NIOSH/OSHA Pocket Guide, Merck Index, ACGIH TLV Booklet, Sax, Aldrich,
RTECS
OTHER REFERENCES: CRC, Sigma-Aldrich, OSHA PEL's

CHEMICAL CLASSIFICATION:

LAST REVISION DATE:
05/02/89

Ecology and Environment, Inc.
Hazard Evaluation of Chemicals
Region V - Chicago

DATE : 4/18/91
JOB NO: PT1305

CHEMICAL NAME: Chromium metal

SYN : Insoluble salts
CAS NO: 7440-47-3
DOT CLASS:
FORMULA: Cr

CHEMICAL PROPERTIES

Phys St: Solid	Boil Pt: 4784.00°F	Ioniz Pot: --	Fl Pt: 0.23°F
Mol Wt: 52.00	Melt Pt: 3432.00°F	Vap Press: --	LFL: --
Sp Gr: 7.20	Frz Pt: 3339.00°F	Odor Thr: --	UFL: --
Odor: none			

INCOMPAT/REACT: strong oxidizers, powdered metal is explosive
SOLUBILITY: insoluble

TOXICOLOGICAL PROPERTIES

Exposure Limits: TLV-TWA (ACGIH): 0.23 ppm
STEL: --
PEL (OSHA): 0.47 ppm
IDLH: 235.57 ppm

OTHER PROPERTIES :
Tox Data: INHAL : -
DERMAL : -
ORAL : -
CARCIN : -
MUTAGEN : -
REPRO TOX: -
AQUATIC : -
OTHER TOX: TARGET ORGANS: Respiratory System
ROUTES OF EXP: Ingestion, Eye(Ocular), Skin Contact, Inhalation

PERSONAL PROTECTIVE MEASURES

RESPIRATORS : APR: dusty/windy condit or known high concent or >1 but <5ppm; SCBA: >5ppm
CARTRIDGE TYPE : GMC-H, AP3 (RACAL)
PROTECTIVE CLOTHING: Coverall: Tyvek Gloves: Butyl
SPEC PRECAUTIONS :

FIRST AID

INHALATION: move to fresh air, artf resp if nec, SEEK MEDICAL ATTENTION
EYE/SKIN : Flush w/water 15 min; wash skin w/soap & water, SEEK MEDICAL ATTENTION.
INGESTION : Give lg amts of water, induce vomiting, SEEK MEDICAL ATTENTION

SYMPTOMS

ACUTE : contact dermatitis, ulceration of skin/nasal mucosa, irritation of eyes/mucous membranes
CHRONIC: pulmonary disease

DISPOSAL, FIRE, SPILLS (see attached sheet)

DISPOSAL: P
FIRE: 13
LEAKS & SPILLS: 3,4,6-9
DECOMPOSITION PRODUCTS:

REFERENCES CONSULTED

NIOSH/OSHA Pocket Guide, ACGIH TLV Booklet
OTHER REFERENCES: NIOSH Guides, Sigma-Aldrich, OSHA

CHEMICAL CLASSIFICATION: Heavy metal

LAST REVISION DATE:
10/19/89

Ecology and Environment, Inc.
Hazard Evaluation of Chemicals
Region V - Chicago

ATE : 4/18/91
OS NO: FT1305

CHEMICAL NAME: Dichloroethane, 1,1-

SYN : Ethylidene Chloride, Chlorinated hydrochloric ether, Ethylidene dichloride
CAS NO: 75-34-3 FORMULA: C2H4CL2
DOT CLASS:

CHEMICAL PROPERTIES

Phys St: Liquid Boil Pt: 135.14°F Ioniz Pot: — FI Pt: 22.00°F
Sol Wt: 98.87 Melt Pt: -142.00°F Vap Press: 102.00 mmHg LFL: 6.00%
Sp Gr: 1.17 Frz Pt: -143.32°F Odor Thr: 49-135.9 ppm UFL: 16.00%
Sol: chloroform
INCOMPAT/REACT: heat, strong oxidizers, caustics, chemically active metals (Al, Mg, Na, K)
SOLUBILITY: miscible w/common solvents; slightly soluble in H2O

TOXICOLOGICAL PROPERTIES

Exposure Limits: TLV-TWA (ACGIH): 200.00 ppm PEL (OSHA): 100.00 ppm
STEL: 250.00 ppm IDLH: 4000.00 ppm

OTHER PROPERTIES:
Tox Data: INHAL: —
DERMAL: —
ORAL: rat LD50: 725mg/kg
CARCIN: indef
MUTAGEN: —
REPRO TOX: exper teratogen
AQUATIC: Tlm: 24hr - 160mg/l
OTHER TOX: TARGET ORGANS: Skin, Liver, Kidneys
ROUTES OF EXP: Ingestion, Eye (Ocular), Skin Contact, Inhalation

PERSONAL PROTECTIVE MEASURES

RESPIRATORS: AFR: dusty/windy condit or known high concent or >1 but <5ppm; SCBA: >5ppm
CARTRIDGE TYPE: GMC-H or A³ (RACAL)
PROTECTIVE CLOTHING: Coverall: Tyvek Gloves: Viton
SPECIAL PRECAUTIONS: Narcotic in high concentrations. Fatal dose LD50 725mg/kg.

FIRST AID

INHALATION: move to fresh air, art resp if nec, SEEK MEDICAL ATTENTION
EYES/SKIN: remove contaminated clothes, flush w/water 15min, wash skin w/soap & water, SEEK MEDICAL ATTENTION
INGESTION: if conscious, induce vomiting, SEEK MEDICAL ATTENTION

SYMPTOMS

ACUTE: drowsiness, irritation of eyes, nose, throat, overexcitement, headache, intoxication, unconscious, shock, nau/vomt, disturbed vision.
CHRONIC: liver damage, dermatitis, skin burns, possible kidney disease

DISPOSAL, FIRE, SPILLS (see attached sheet)

DISPOSAL: D FIRE: 6,7 LEAKS & SPILLS: 1,3,4,6,9
COMPOSITION PRODUCTS: vinyl chloride, hydrogen chloride, phosgene, carbon monoxide, carbon dioxide

REFERENCES CONSULTED

NIOSH/OSHA Pocket Guide, ACGIH TLV Booklet, RTECS
OTHER REFERENCES: Sigma-Aldrich, Handbook of Poisoning

CHEMICAL CLASSIFICATION: Halogenated Hydrocarbon, Halogen Compd, Aliphatic & Alicyclic

LAST REVISION DATE:
05/10/89

Ecology and Environment, Inc.
Hazard Evaluation of Chemicals
Region V - Chicago

DATE : 4/18/91
JOB NO: FT1305

CHEMICAL NAME: Dichloroethane, 1,2-
SYN : Ethylene dichloride, Acetylene dichloride dioform, Dutch oil
CAS NO: 107-06-2 FORMULA: C1H2Cl2Cl
DOT CLASS: FLAMM LIQ.

CHEMICAL PROPERTIES

Phys St: Liquid Boil Pt: 100.00°F Ionz Pot: 11.12eV FI Pt: 60.00°F
Sol Wt: 98.96 Melt Pt: -31.00°F Vap Press: 62.00 mmHg LFL: 6.20%
Sp Gr: 1.27 Frz Pt: -32.30°F Odor Thr: 26.00ppm UFL: 16.00%
Odor: chloroform-like, pleasant, sweet
INCOMPAT/REACT: heat, strong oxidizers, aluminum
SOLUBILITY: water-slightly; miscible w/alcohol, chloroform, ether

TOXICOLOGICAL PROPERTIES

Exposure Limits: TLV-TWA (ACGIH): 10.00 ppm PEL (OSHA): 50.00 ppm
STEL: --- IDLH: ---
OTHER PROPERTIES: CEILING: 100ppm; ACC MAX PEAK: 200 ppm/5min/3hr/8hr shift
Tox Data: INHAL: hum TC10: 1000ppm/1H
DERMAL: skin rbt LD50: 4886 mg/kg
ORAL: rat LD50: 670 mg/kg
CARCIN: YES-animal +, Human susp
MUTAGEN: exper
REPRO TOX: exper teratogen
AQUATIC: ---
OTHER TOX: TARGET ORGANS: Kidney, Liver, Eye, Skin, CNS
ROUTES OF EXP: Ingestion, Eye (Ocular), Dermal Absorption, Skin Contact, Inhalation

PERSONAL PROTECTIVE MEASURES

RESPIRATORS: AFR: dusty/windy condit or known high concent or >1 but <5ppm; SCBA: >5ppm
CARTRIDGE TYPE: GMC-H or AP3
PROTECTIVE CLOTHING: Coverall: PE Tyvek Gloves: Viton-13hr, PVA-8hr (PVA degrades in water)
SPEC PRECAUTIONS: Flammable: dangerous fire risk. Irritant.

FIRST AID

INHALATION: move to fresh air, art resp if nec, SEEK MEDICAL ATTENTION
EYE/SKIN: remove contaminated clothes, flush w/water at least 15 min., SEEK MEDICAL ATTENTION
INGESTION: If conscious, induce vomiting, SEEK MEDICAL ATTENTION IMMEDIATELY

SYMPTOMS

ACUTE: irritation of nose/throat/eyes, dizziness, drowsiness, unconscious, vomiting, diarrhea, cardiovascular collapse
CHRONIC: weight loss, low blood pressure, jaundice, oliguria, anemia, nausea, headache, vomiting, damage to liver/kidneys, gastrointestinal disturbances, dermatitis, CNS, heart

DISPOSAL, FIRE, SPILLS (see attached sheet)

DISPOSAL: D FIRE: 6,7 LEAKS & SPILLS: 1,3,4,6,9
DECOMPOSITION PRODUCTS: hydrogen chloride, phosgene, carbon monoxide, CO2

REFERENCES CONSULTED

NIOSH/OSHA Pocket Guide, Merck Index, Chris (vol. III), ACGIH TLV Booklet, RTECS
OTHER REFERENCES: Sigma-Aldrich, OSHA, Cond Chemical Dict, Poison Handbook, 1st Aid for Chem Acc

CHEMICAL CLASSIFICATION: Chlorinated Solvent

LAST REVISION DATE:
05/10/89

Ecology and Environment, Inc.
Hazard Evaluation of Chemicals
Region V - Chicago

ATE : 4/18/91
DB NO: ET1305

CHEMICAL NAME: Dioxin

SYN : TCDD, Contaminant of Tetrachlorodioxin
CAS NO: 1746-01-6 FORMULA: C12H4Cl4O2
DOT CLASS:

CHEMICAL PROPERTIES

Phys St: Solid	Boil Pt: —	Ioniz Pot: —	Fl Pt: —
mol Wt: 322.00	Melt Pt: 305.00°C	Vap Press: —	LFL: —
p Gr: —	Frz Pt: 305.00°C	Odor Thr: —	UFL: —
odor: none			
INCOMPAT/REACT: Ultraviolet light			
SOLUBILITY: insoluble in water			

TOXICOLOGICAL PROPERTIES

Exposure Limits: TLV-TWA (ACGIH): —	PEL (OSHA): —
STEL: —	IDLH: —
OTHER PROPERTIES:	
Tox Data: INHAL: —	
DERMAL: rat LD50: 22500mg/kg	
ORAL: —	
CARCIN: human sus, rat/mous posit	
MUTAGEN: animal positive	
REPRO TOX: animal teratogen	
AQUATIC: —	
OTHER TOX: HIGHLY TOXIC AND PERSISTENT	
ROUTES OF EXP: Ingestion, Eye (Ocular), Dermal Absorption, Skin Contact, Inhalation	

PERSONAL PROTECTIVE MEASURES

RESPIRATORS: AFR: dusty/windy condit or known high concent or >1 but <5ppm; SCBA: >5ppm
CARTRIDGE TYPE: GMP, AP3 (RACAL)
PROTECTIVE CLOTHING: Coveralls: Saranex Gloves: Neoprene Boots: Neoprene for soil sampling
PEC PRECAUTIONS: .

FIRST AID

INHALATION: move to fresh air, CPR if nec, SEEK MEDICAL ATTENTION
EYE/SKIN: flush w/lg amt of water 15 min, wash skin with soap/water, SEEK MEDICAL ATTENTION
INGESTION: SEEK MEDICAL ATTENTION

SYMPTOMS

ACUTE: chloracne, liver toxicity or cirrhosis, diarrhea, headache, weight loss, psycholog. disturb, inflamm of kidney/bladder, thymus atrophy
CHRONIC: causes cancer in lab animals (liver/lung tumors), suppresses immunities

DISPOSAL, FIRE, SPILLS (see attached sheet)

DISPOSAL:	FIRE:	LEAKS & SPILLS:
DECOMPOSITION PRODUCTS:		

REFERENCES CONSULTED

NIOSH/OSHA Pocket Guide, Merck Index, RTECS
OTHER REFERENCES: Cond Chem Dict, Casarett & Doulls

CHEMICAL CLASSIFICATION: Chlorinated Hydrocarbon

LAST REVISION DATE:
05/03/89

Ecology and Environment, Inc.
Hazard Evaluation of Chemicals
Region V - Chicago

DATE : 4/18/91
JOB NO: FT 1305

CHEMICAL NAME: Hydrogen Cyanide

SYN : Hydrocyanic acid, Prussic acid, Formonitrile
CAS NO: 74-90-8 FORMULA: HCN
DOT CLASS: 1051-POIS-CLS 6

CHEMICAL PROPERTIES

Phys St: Liquid Boil Pt: 78.00°F Ionz Pot: 13.91ev FI Pt: —
Sp Wt: 27.03 Melt Pt: 8.10°F Vap Press: 620.00 mmHg LFL: 5.50%
Sp Gr: 0.68 Frz Pt: 8.10°F Odor Thr: 0.814-4.52 ppm UFL: 40.00%
Color: sweetish, almond-like
INCOMPAT/REACT: water, caustics, amines, light-sensitive
SOLUBILITY: miscible-water, alcohol, ether

TOXICOLOGICAL PROPERTIES

Exposure Limits: TLV-TWA (ACGIH): 10.00 ppm SKIN PEL (OSHA): 10.00 ppm SKIN STEL: 4.7 ppm
STEL: — IDLH: 50.00 ppm
OTHER PROPERTIES: TLV = Ceiling Limit (15min) (ACGIH).
Toxic Data: INHAL: hum LCLD: 200mg/m3/10min
DERMAL: —
ORAL: hum LDLo: 570ug/kg
CARCIN: —
MUTAGEN: —
REPRO TOX: —
AQUATIC: .16ppm/72hr/young bass/TLW/fresh water
OTHER TOX: TARGET ORGANS: CNS, Liver, Kidney, CVS
ROUTES OF EXP: Ingestion, Eye(Ocular), Dermal Absorption, Skin Contact, Inhalation

PERSONAL PROTECTIVE MEASURES

RESPIRATORS: any detectable concentration - SCBA
CARTRIDGE TYPE: no cartridge available
PROTECTIVE CLOTHING: Level D: Tyvek coverall & PE gloves; Level C: Impermeable Suit
SPECIAL PRECAUTIONS: High concentrations in air are DANGEROUS to exposed skin, eyes, mucous membranes. Flammable substance.

FIRST AID

INHALATION: move to fresh air, artif resp if nec, SEEK MEDICAL ATTENTION
EYES/SKIN: flush w/water at least 15 min, SEEK MEDICAL ATTENTION
INGESTION: give lg amt of water or milk, induce vomiting, SEEK MEDICAL ATTENTION

SYMPTOMS

SYMPTOMS: bitter/burning taste, constriction in throat, weakness, headache, confusion, nausea/vomiting, unconscious, death, eye irritation,
SYMPTOMS: dizziness, weakness, lung congestion, hoarseness, conjunctivitis, lost appetite, weight loss, dermatitis, mental deterioration

DISPOSAL, FIRE, SPILLS (see attached sheet)

DISPOSAL: S FIRE: 4,10 LEAKS & SPILLS: 4,6,7,8,9
DECOMPOSITION PRODUCTS: toxic fumes of CN

REFERENCES CONSULTED

NIOSH/OSHA Pocket Guide, Merck Index, Chris(vol. III), ACGIH TLV Booklet, RTECS
OTHER REFERENCES: NIOSH Guides, OSHA, Cond Chem Dict, Poison Handbook, Kirk Othmer, Clin Tox

CHEMICAL CLASSIFICATION:

LAST REVISION DATE:
06/02/89

Ecology and Environment, Inc.
Hazard Evaluation of Chemicals
Region V - Chicago

ATE : 4/18/91
DB NO: FT1305

CHEMICAL NAME: Lead

SYN : White lead, Plumbum, Inorganic Lead
CAS NO: 7439-92-1 FORMULA: Pb
DOT CLASS:

CHEMICAL PROPERTIES

Phys St: Solid	Boil Pt: 3164.00°F	Ioniz Pot: ---	FI Pt: ---
Vol Wt: 207.00	Melt Pt: 620.00°F	Vap Press: ---	LFL: ---
p Gr: 11.30	Frz Pt: ---	Odor Thr: ---	UFL: ---
odor: none			

INCOMPAT/REACT: strong oxidizers, peroxides, active metals
SOLUBILITY:

TOXICOLOGICAL PROPERTIES

Exposure Limits: TLV-TWA (ACGIH): 0.01 ppm	PEL (OSHA): ---
STEL: ---	IDLH: ---

OTHER PROPERTIES : PEL - 50ug/m3

Tox Data: INHAL : -
DERMAL : -
ORAL : rat TDLo: 750mg/kg
CARCIN : indefinite
MUTAGEN : -
REPRO TOX: exper teratogen
AQUATIC : -
OTHER TOX: TARGET ORGNS: GI Tract, CNS, Kid, Bld, Gingival Tissue
ROUTES OF EXP: Ingestion, Eye (Ocular), Skin Contact, Inhalation

PERSONAL PROTECTIVE MEASURES

RESPIRATORS : APR: dusty/windy condit or known high concent or >1 but <5ppm; SCBA: >5ppm
CARTRIDGE TYPE : GNC-H, AP3 (RACAL)
PROTECTIVE CLOTHING: Coverall: Saranex Gloves: Nitrile
SPEC PRECAUTIONS :

FIRST AID

INHALATION: move to fresh air, artf resp if nec, SEEK MEDICAL ATTENTION
EYE/SKIN : flush w/water 15 minutes, wash skin with soap/water, SEEK MEDICAL ATTENTION
INGESTION : give water, induce vomiting, SEEK MEDICAL ATTENTION IMMEDIATELY

SYMPTOMS

ACUTE : cumulative neurotoxin (prolong expos), stomach distress, vomitg, diarrhea, black stools, anemia, nervous system effects
CHRONIC: alimentary: abdm pain/discomf, constptn, diarrh neuromusc: musc weakness, joint/musc pain, dizzy, insom, encephalic: brain involvement, stupor, coma, death-rare reprod: poison to m/f germ cells

DISPOSAL, FIRE, SPILLS (see attached sheet)

DISPOSAL: P FIRE: 13 LEAKS & SPILLS: 7,8,10
DECOMPOSITION PRODUCTS: toxic fumes of lead

REFERENCES CONSULTED

NIOSH/OSHA Pocket Guide, ACGIH TLV Booklet, RTECS
OTHER REFERENCES: Sigma-Aldrich, OSHA 1910., Handbook of Poisoning

CHEMICAL CLASSIFICATION: Heavy Metal

LAST REVISION DATE:
04/18/89

Ecology and Environment, Inc.
Hazard Evaluation of Chemicals
Region V - Chicago

revised paper

DATE 4/18/91

CHEMICAL NAME: Methane

Job : FELLOWSHIP
CAS : 74-82-8
DOT Class: FLAMMABLE GAS
Synonym: Marsh gas, Methyl Hydride
Formula: CH₄
UN/NA #: UN 1971

CHEMICAL PROPERTIES

Phys St: Gas. Liq. Boil Pt: -258.88 °F Ionz Pot: 12.98 eV FI Pt: -386.00 °F
Mol Wt: 16.04 Melt Pt: -296.50 °F Vap Press: 1650.74000 mmHg LFL: 5.00%
Sp Gr: 0.42 Frz Pt: -296.50 °F Odor Thr: --- UFL: 15.00%
Stable: Y
Odor: ODORLESS
Incompat/React: forms explosive mixtures with air; inert to acids, alkalis
Solubility: alcohol, ether, organic solvents, slightly in water

TOXICOLOGICAL PROPERTIES

Exposure Limits: TLV-TWA (ACGIH): --- PEL (OSHA): --- IDLH: ---
STEL: --- STEL: ---
Other Properties: SIMPLE ASPHYXIAN. No exposure limits established. NIOSH REL: 100 ppm/8hr
Tox Data: Inhalation: NE
Dermal: NE
Oral: NE
Carcinogen: NE
Mutagen: NE
Reproduct.: NE
Aquatic: NE
Other Tox.: NE
Routes of Exp.: Inhalation

PERSONAL PROTECTIVE MEASURES

Respirators: 1-100 PPM-NO RESPIRATOR AVAILABLE; 100-500 PPM-UPGRADE TO A SCBA; >500 PPM EVACUATE AREA
Cartridge Type: NO CARTRIDGE AVAILABLE
Protective Clothing: COVERALLS: TYVEK GLOVES: LATEX
Special Precautions: EXTREMELY FLAMMABLE. VAPOR EXPLOSION HAZARD INDOORS, OUTDOORS OR IN SEWERS. KEEP OUT OF LOW AREAS WITH METHANE READINGS

FIRST AID

Inhalation: move to fresh air, artif resp if nec, SEEK MEDICAL ATTENTION
Eye/Skin: flush w/water at least 15 min, SEEK MEDICAL ATTENTION
Ingestion: NA

SYMPTOMS

Acute: HEADACHE, DIZZINESS, DIFFICULTY BREATHING, NAUSEA/VOMITG, DEPRESSION, EXCITEMENT, CONVULSIONS, LOSS OF CONSCIOUSNESS. L-
LIQUID WILL CAUSE FROSTBITE
Chronic: NONE KNOWN

DISPOSAL, FIRE, SPILLS (see attached sheet)

Disposal: NE Fire: NE Leaks & Spills: NE
Decomposition Products: NE

REFERENCES CONSULTED

Merck Index, ACGIH TLV Booklet
Other References: Hawleys (11th), CAMEL Resp Info, Poison Handbk, 1st Aid for Chem Accidents

Chemical Classification: SIMPLE ASPHYXIAN

Last Revision Date:
07/17/90

Ecology and Environment, Inc.
Hazard Evaluation of Chemicals
Region V - Chicago

DATE : 4/18/91
JOB NO: ET1305

CHEMICAL NAME: Nickel

SYN : Synonyms vary depending on specific compound
CAS NO: 7440-02-0 FORMULA: Ni
DOT CLASS:

CHEMICAL PROPERTIES

Phys St: Solid Boil Pt: 5138.00°F Ionz Pot: --- FI Pt: ---
Mol Wt: 58.70 Melt Pt: 2631.00°F Vap Press: --- LFL: ---
Sp Gr: 8.90 Frz Pt: 2651.00°F Odor Thr: --- UFL: ---
Odor: none
INCOMPAT/REACT: heat, strong acids, oxidizers, sulfur, titanium, ammonium nitrate, potassium perchlorate, hydrazoic acid
SOLUBILITY: insoluble

TOXICOLOGICAL PROPERTIES

Exposure Limits: TLV-TWA (ACGIH): 0.41 ppm PEL (OSHA): 0.41 ppm
STEL: --- IDLH: ---
OTHER PROPERTIES: IRRITANT
Tox Data: INHAL: ---
DERMAL: ---
ORAL: rat LD₅₀: 158mg/kg
CARCIN: Animal posit, human susp
MUTAGEN: exper
REPRO TOX: exper teratogen
AQUATIC: ---
OTHER TOX: TARGET ORGANS: Nasal Cavities, Lungs, Skin
ROUTES OF EXP: Ingestion, Eye (Ocular), Skin Contact, Inhalation

PERSONAL PROTECTIVE MEASURES

RESPIRATORS: AFR: dusty/windy condit or known high concent or >1 but <5ppm; SCBA: >5ppm
CARTRIDGE TYPE: GMC-H or AP3 (KACAL)
PROTECTIVE CLOTHING: Coverall: Saranex Gloves: Nitrile
SPEC PRECAUTIONS: .

FIRST AID

INHALATION: move to fresh air, CPR if nec, SEEK MEDICAL ATTENTION
EYE/SKIN: flush w/water 15 min, wash skin with soap/water, SEEK MEDICAL ATTENTION
INGESTION: DO NOT INDUCE VOMITING, SEEK MEDICAL ATTENTION

SYMPTOMS

ACUTE: irritation of skin/eyes/mucous membranes of upper resp tract, naus/vomit, giddiness, headache
CHRONIC: dermatitis resulting from skin sensitization; cancer of lung & nasal passages in nickel refining employees

DISPOSAL, FIRE, SPILLS (see attached sheet)

DISPOSAL: P FIRE: 2 LEAKS & SPILLS: 3,4,6-9
DECOMPOSITION PRODUCTS: nickel carbonyl, oxides of nitrogen

REFERENCES CONSULTED

NIOSH/OSHA Pocket Guide, Merck Index, ACGIH TLV Booklet
OTHER REFERENCES: NIOSH Guides, Sigma-Aldrich

CHEMICAL CLASSIFICATION: Metal

LAST REVISION DATE:
05/10/89

Ecology and Environment, Inc.
Hazard Evaluation of Chemicals
Region V - Chicago

DATE : 4/18/91
JOB NO: FT1305

CHEMICAL NAME: Polychlorinated Biphenyl 1242
SYN : PCB 1242, Arochlor 1242, Chlorodiphenyl
CAS NO: 53469-21-9 FORMULA: C12H7Cl3
DOT CLASS: 2315

CHEMICAL PROPERTIES

Phys St: Liquid Boil Pt: 617.00°F Ionz Pot : -- FI Pt: 349.00°F
Mol Wt : 258.00 Melt Pt: -- Vap Press: 0.001 mmHg LFL : --
Sp Gr : 1.30 Frz Pt : -2.00°F Odor Thr : 0.0095 ppm UFL : --
Odor : pleasant, butter like
INCOMPAT/REACT: strong oxidizers
SOLUBILITY : insoluble

TOXICOLOGICAL PROPERTIES

Exposure Limits: TLV-TWA (ACGIH): 0.09 ppm SKIN PEL (OSHA): 0.09 ppm SKIN
STEL: -- IDLH: 0.47 ppm
OTHER PROPERTIES : affects male/female reproduction, Genetic injury to animals in experiments, PERSIS, TOXIC
Tox Data: INHAL : human Tclo: 10mg/m3
DERMAL : -
ORAL : rat LD50: 4250mg/kg
CARCIN : human suspect
MUTAGEN : animal positive
REPRO TOX: teratogen
AQUATIC : Tlm 96: .273 ppm
OTHER TOX: TARGET ORGANS: Skin, Liver, Resp Sys, Eyes
ROUTES OF EXP: Ingestion, Eye(Ocular), Dermal Absorption, Skin Contact, Inhalation

PERSONAL PROTECTIVE MEASURES

RESPIRATORS : To be determined on a case-by-case basis by H & S Staff.
CARTRIDGE TYPE : GMC-H or AP3 (RACAL)
PROTECTIVE CLOTHING: Coveralls: Saranex Gloves: Neoprene, Viton Boots: Neoprene for soil sampling in known conc.
SPEC PRECAUTIONS : High concentrations in air are dangerous to exposed skin, eyes, mucous membranes.

FIRST AID

INHALATION: move to fresh air, artif resp if nec, SEEK MEDICAL ATTENTION
EYE/SKIN : flush w/water 15min, wash skin with soap/water, SEEK MEDICAL ATTENTION
INGESTION : give salt water, induce vomiting, SEEK MEDICAL ATTENTION IMMEDIATELY

SYMPTOMS

ACUTE : irritation of skin/eyes/nose/throat, can cause vomiting, edema, anorexia, nausea, abdominal pain, fatigue, pigmentat-
ion of skin & nails
CHRONIC: chloracne, acute/chronic may cause liver damage/cancer, heart/kidney edema; reprod: orl ing may be embryotoxic causg s-
tillbirth, grey-brn skin, incr. eye dischrng to babies born to women exposd during preg

DISPOSAL, FIRE, SPILLS (see attached sheet)

DISPOSAL: D,0 FIRE: 7 LEAKS & SPILLS:
DECOMPOSITION PRODUCTS: HCl, CO

REFERENCES CONSULTED

NIOSH/OSHA Pocket Guide, Merck Index, Chris(vol. III), ACGIH TLV Booklet, RTECS
OTHER REFERENCES: Sigma-Aldrich, Poison Handbook

CHEMICAL CLASSIFICATION: Halogen Cmpd, Aromatic, Polycyclic

LAST REVISION DATE:
05/10/89

Ecology and Environment, Inc.
Hazard Evaluation of Chemicals
Region V - Chicago

DATE : 4/18/91
DB NO: ET1305

CHEMICAL NAME: Polychlorinated Biphenyl 1254
SYN : PCB 1254, Aroclor 1254, Chlorodiphenyl, Chlorinated Biphenyl
CAS NO: 11097-69-1 FORMULA: C12H5Cl5
DOT CLASS:

CHEMICAL PROPERTIES

Phys St: Liquid Boil Pt: 689.00°F Ioniz Pot: --- FI Pt: 236.00°F
Vol Wt: 326.00 Melt Pt: --- Vap Press: 0.00006 mmHg LFL: ---
Sp Gr: 1.50 Frz Pt: 432.00°F Odor Thr: 0.0095 ppm UFL: ---
Odor: pleasant, butter like
INCOMPAT/REACT: strong oxidizers, heat
SOLUBILITY: insoluble-water; most organic solvents

TOXICOLOGICAL PROPERTIES

Exposure Limits: TLV-TWA (ACGIH): 0.03 - ppm SKIN PEL (OSHA): 0.03 ppm SKIN
STEL: --- IDLH: ---
OTHER PROPERTIES: Affect male/female reproduct, PERSISTENT, Genetic injury in animal experiments, TOXIC
Tox Data: INHAL: ---
DERMAL: rat Tdlo: 4mg/kg; ETA
ORAL: rat LD50: 1295mg/kg
CARCIN: YES
MUTAGEN: exper
REPRO TOX: exper teratogen
AQUATIC: .278ppm/96hr/bluegill/TM/fresh water
OTHER TOX: TARGET ORGANS: Skin, Liver, Resp Sys, Eyes
ROUTES OF EXP: Ingestion, Eye(Ocular), Dermal Absorption, Skin Contact, Inhalation

PERSONAL PROTECTIVE MEASURES

RESPIRATORS: To be determined on a case-by-case basis by H & S Staff.
CARTRIDGE TYPE: GMC-H or AP3 (RACAL)
PROTECTIVE CLOTHING: Coverall: Saranex Gloves: Neoprene, Viton Boots: Neoprene for soil sampling in known concent.
SPECIAL PRECAUTIONS: High concentrations in air are dangerous to exposed skin/eyes/mucous membranes.

FIRST AID

INHALATION: move to fresh air, artif resp if nec, SEEK MEDICAL ATTENTION
EYES/SKIN: flush w/water 15 min, wash skin with soap/water, SEEK MEDICAL ATTENTION
INGESTION: give salt water, induce vomiting, SEEK MEDICAL ATTENTION IMMEDIATELY

SYMPTOMS

ACUTE: irritation of eyes/nose/throat, can cause vomitg, edema, anorexia, nausea, abdominal pain, fatigue
CHRONIC: chloracne, dermatitis, jaundice, dark urine, liver/kidney/heart damage or cancer, INCREASED CHLORINATION EQUALS INCREASED TOXICITY

DISPOSAL, FIRE, SPILLS (see attached sheet)

DISPOSAL: D,0 FIRE: 7 LEAKS & SPILLS:
DECOMPOSITION PRODUCTS: HCl, CO

REFERENCES CONSULTED

IOSH/OSHA Pocket Guide, Merck Index, Chris(vol. III), ACGIH TLV Booklet, RTECS
OTHER REFERENCES: Sigma-Aldrich, Poison Handbook, Cond Chem Dict, Cassarett, Kirk-Othmer

CHEMICAL CLASSIFICATION: Aromatic Halogenated Hydrocarbon

LAST REVISION DATE:
05/10/89

Ecology and Environment, Inc.
Hazard Evaluation of Chemicals
Region V - Chicago

DATE : 4/18/91
JOB NO: FT1305

SYN : Cyanograin

CAS NO: 143-33-9

DOT CLASS:

CHEMICAL NAME: Sodium Cyanide

FORMULA: NaCN

CHEMICAL PROPERTIES

Phys St: Solid	Boil Pt: 2724.8°F	Ioniz Pot: —	FI Pt: —
Mol Wt: 49.00	Melt Pt: 1046.4°F	Vap Press: 1.00 mmHg	LFL: —
Sp Gr: 1.60	Frz Pt: 1046.6°F	Odor Thr: —	UFL: —

Odor : faint almond, odorless when perfectly dry

INCOMPAT/REACT: strong oxidizers, nitrates, chlorates, acids, acid salts

SOLUBILITY : soluble

TOXICOLOGICAL PROPERTIES

Exposure Limits: TLV-TWA (ACGIH): 2.50 ppm SKIN PEL (OSHA): —
STEL: — IDLH: 100.20 ppm

OTHER PROPERTIES : Oral Rat: LD50: 6440 ug/kg

Tox Data: INHAL : —

DERMAL : —

ORAL : man: LDLo: 2857ug/kg

CARCIN : —

MUTAGEN : —

REPRO TOX: —

AQUATIC : —

OTHER TOX: TARGET ORGANS: CNS, CVS, Liver, Kidney

ROUTES OF EXP: Ingestion, Dermal Absorption, Skin Contact, Inhalation

PERSONAL PROTECTIVE MEASURES

RESPIRATORS : 0-1ppm - SCBA

CARTRIDGE TYPE : NA

PROTECTIVE CLOTHING: Coveralls: PE Tyvek Gloves: PE

SPEC PRECAUTIONS : High concentrations in air are dangerous to exposed skin/eyes/mucous membranes

FIRST AID

INHALATION: move to fresh air, give O2/CPR as nec. SEEK MEDICAL ATTENTION

EYE/SKIN : Flush w/water 15min. SEEK MEDICAL ATTENTION

INGESTION : Induce vomiting. SEEK MEDICAL ATTENTION

SYMPTOMS

ACUTE : skin contact causes burns to skin/eyes, headache, dizzy, nausea, difficult breath, clenched jaw, convulsions, dilated pupils, unconscious, rapid death via asphyxia.

CHRONIC: dermatitis, changes in thyroid gland, loss of appetite, weakness.

DISPOSAL, FIRE, SPILLS (see attached sheet)

DISPOSAL: S FIRE: 4,10 LEAKS & SPILLS: 4,6,7,8,9

DECOMPOSITION PRODUCTS: HCN, CO, CO2, NOX

REFERENCES CONSULTED

NIOSH/OSHA Pocket Guide, ACGIH TLV Booklet, Aldrich, RTECS

OTHER REFERENCES: Emerg. Resp Guide, CRC, 1st Aid for Chem Accidents

CHEMICAL CLASSIFICATION:

LAST REVISION DATE:
04/17/89

WASTE-DISPOSAL METHODS

The disposal methods outlined below are intended only as guides. We do not assume responsibility for their use. Careful consideration must be given to the chemical and physical properties of the substance. In addition, local laws and regulations may preclude the use of these methods which are primarily designed for small quantities. Observe all federal, state, and local laws.

The disposal of some chemicals may require deactivation or modification of the material by chemical means. Chemical waste-disposal reactions must be handled with the same care and consideration used with synthetic procedures. Appropriate consideration must be given to reaction conditions, *i.e.*, stoichiometry, order and rate of addition, heat of reaction, evolution of gaseous products, pH, efficiency of stirring, rate of reaction, atmospheric sensitivity, etc.

Chemical waste-disposal reactions should be carried out in a chemical fume hood and in appropriate laboratory glassware. Because these reactions are often vigorous, protective safety equipment such as safety goggles, respirator, gloves, face and/or safety shield and other protective equipment must be used.

Initial reactions in a disposal sequence should be carried out on a small scale (5-10g). The reactant concentrations should not exceed 10% of the reaction volume and the final reaction volume should not exceed 50% of the working capacity of the reaction vessel, regardless of the reaction scale. Larger quantities of the material should be handled in several small-size reactions. To ensure completion of reaction, the waste disposal procedure should be run for at least an additional 4 to 8 hours after all materials have been mixed.

All reactions should be run by technically qualified persons familiar with the potential hazards of the chemical reactions.

- A Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.
- B The material should be ignited in the presence of sodium carbonate and slaked lime (calcium hydroxide). The substance should be mixed with vermiculite and then with the dry caustics, wrapped in paper and burned in a chemical incinerator equipped with an afterburner and scrubber.
- C This combustible material may be burned in a chemical incinerator equipped with an afterburner and scrubber.
- D Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable.
- E To a solution of the product in water, add an excess of dilute sulfuric acid. Let stand overnight. Remove any insolubles and bury in a landfill site approved for hazardous-waste disposal.
- F Cautiously dissolve the material in water. Neutralize immediately with sodium carbonate or, if the material does not dissolve completely, add a little hydrochloric acid followed by sodium carbonate. Add calcium chloride in excess of the amount needed to precipitate the fluoride and/or carbonate.

Separate the insolubles and bury in a landfill site approved for hazardous-waste disposal.

- G Under an inert atmosphere, cautiously add the material to dry butanol in an appropriate solvent. The chemical reaction may be vigorous and/or exothermic. Provisions must be made for venting of large volumes of highly flammable hydrogen and/or hydrocarbon gases. Neutralize the solution with aqueous acid. Filter off any solid residues for disposal as hazardous waste. Burn the liquid portion in a chemical incinerator equipped with an afterburner and scrubber.
- H Neutralize the solution and add filtering agent (10g per 100ml). Evaporate the liquid and bag the residual solid for burial in a landfill site approved for hazardous-waste disposal.
- I Dissolve the solid in (or dilute the solution with) a large volume of water. Carefully add a dilute solution of acetic acid or acetone to the mixture in a well-ventilated area. Provisions should be made to vent safely the hydrogen gas given off during the decomposition. Check acidity of the solution and adjust to pH 1 if necessary. Let stand overnight. Neutralize the solution (pH 7). Evaporate the solution and bury the residue in a landfill site approved for hazardous-waste disposal.
- J Cautiously acidify a 3% solution or a suspension of the material to pH 2 with sulfuric acid. Gradually add a 50% excess of aqueous sodium bisulfite with stirring at room temperature. An increase in temperature indicates that a reaction is taking place. If no reaction is observed on the addition of 10% of the sodium bisulfite solution, initiate it by cautiously adding more acid. If manganese, chromium, or molybdenum is present, adjust the pH of the solution to 7 and treat with sulfide to precipitate for burial as hazardous waste. Destroy excess sulfide, neutralize and flush solution down the drain.
- K Please contact the Technical Services Department. Be sure to mention name, catalog number and quantity of the material.
- L The material should be dissolved in 1) water; 2) acid solution or 3) oxidized to a water-soluble state. Precipitate the material as the sulfide, adjusting the pH of the solution to 7 to complete precipitation. Filter the insolubles and dispose of them in a hazardous-waste site. Destroy any excess sulfide with sodium hypochlorite. Neutralize the solution before flushing down the drain.
- M A slurry of the arenediazonium salt with water can be disposed of by adding it gradually to a stirred solution of 5-10% excess 2-naphthol in 3% aqueous sodium hydroxide at 0-20°C. After 12 hours, the resulting azo dye is filtered and either incinerated or buried in a landfill site approved for hazardous-waste disposal. Neutralize the remaining solution before disposal.
- N For small quantities: cautiously add to a large stirred excess of water. Adjust the pH to neutral, separate any insoluble solids or liquids and package them for hazardous-waste disposal. Flush the aqueous solu-

tion down the drain with plenty of water. The hydrolysis and neutralization reactions may generate heat and fumes which can be controlled by the rate of addition.

- O Bury in a landfill site approved for the disposal of chemical and hazardous waste.
- P Material in the elemental state should be recovered for reuse or recycling.
- Q Cautiously make a 5% solution of the material in water or dilute acid. There may be a vigorous, exothermic reaction and fumes may be generated due to the hydrolysis of the material. Control any reaction by cooling and by the rate of addition of the material. Gradually add dilute ammonium hydroxide to pH 10. Filter off any precipitate for disposal in a chemical landfill. If there is no precipitation, gradually adjust the pH from 10 to 6, stopping when precipitation occurs.
- R Catalysts and expensive metals should be recovered for reuse or recycling.
- S Treat a dilute basic solution (pH 10-11) of the material with a 50% excess of commercial laundry bleach. Control the temperature by the addition rate of bleach and adjust pH if necessary. Let stand overnight. Cautiously adjust solution to pH 7. Vigorous evolution of gas may occur. Filter any solids for burial in a chemical landfill. Precipitate any heavy metals by addition of sulfide and isolate for burial. Additional equivalents of hypochlorite may be needed if the metal can be oxidized to a higher valence state. For metal carbonyls, the reaction should be carried out under nitrogen.
- T Cautiously make a 5% solution of the product in water; vent because of possible vigorous evolution of flammable hydrogen gas. Acidify the solution to pH 1 by adding 1M sulfuric acid dropwise. Acidification will cause vigorous evolution of hydrogen gas. Allow the solution to stand overnight. Evaporate the solution to dryness and bury the residue in a landfill site approved for hazardous-waste disposal.
- U Take the material (or a solution) and make a 5% solution in tetrahydrofuran. Cautiously add the solution dropwise to an ice-cooled, stirred basic solution of commercial bleach. Oxidation may release flammable hydrocarbon gases which must be vented. Let stand overnight. Adjust the pH to 7 and destroy excess hypochlorite with sodium bisulfite before disposal of the solution.
- V Under an inert atmosphere cautiously add dry butanol or a mixture of dry butanol in an appropriate solvent, to a solution of the material in tetrahydrofuran. The chemical reaction may be vigorous and/or exothermic. Provisions must be made for the venting of a large volume of flammable hydrogen gas. When gas evolution ceases, cautiously add a basic hypochlorite solution dropwise to the reaction solution. Let stand overnight. Neutralize the solution and treat with sodium bisulfite to destroy any excess hypochlorite. Filter any solids for burial in a landfill site approved for hazardous-waste disposal.

THE SIGMA-ALDRICH LIBRARY OF CHEMICAL SAFETY DATA

Explanation of Codes

PROCEDURES FOR SPILLS OR LEAKS

- 1 Absorb on sand or vermiculite and place in closed container for disposal.
- 2 Cover with dry lime, sand, or soda ash. Place in covered containers using nonsparking tools and transport outdoors.
- 3 Shut off all sources of ignition.
- 4 Evacuate area.
- 5 Cover with an activated carbon adsorbent, take up and place in closed container. Transport outdoors.
- 6 Ventilate area and wash spill site after material pickup is complete.
- 7 Sweep up, place in a bag and hold for waste disposal.
- 8 Avoid raising dust.
- 9 Wear self-contained breathing apparatus, rubber boots and heavy rubber gloves.
- 10 Wear respirator, chemical safety goggles, rubber boots and heavy rubber gloves.
- 11 Cover with dry lime or soda ash, pick up, keep in a closed container and hold for waste disposal.
- 12 Carefully sweep up and remove.
- 13 Flush spill area with copious amounts of water.
- 14 Mix with solid sodium bicarbonate.
- 15 Place in appropriate container.
- 16 Wear protective equipment.
- 17 Wash spill site with soap solution.
- 18 Please contact the Technical Services Department. Be sure to mention the name and catalog number of the material.

FIRE-EXTINGUISHING MEDIA

- 1 Carbon dioxide.
- 2 Dry chemical powder.
- 3 Water spray.
- 4 Alcohol or polymer foam.
- 5 Class D fire-extinguishing material only.
- 6 Water may be effective for cooling, but may not effect extinguishment.
- 7 Carbon dioxide, dry chemical powder, alcohol or polymer foam.
- 8 Foam and water spray are effective but may cause frothing.
- 9 Do not use dry chemical powder extinguisher on this material.
- 10 Do not use carbon dioxide extinguisher on this material.
- 11 Noncombustible.
- 12 Do not use water.
- 13 Use extinguishing media appropriate to surrounding fire condition.



SITE DOSIMETER LOG

PROJECT/PAN # FT1305/FILO452SA

SITE NAME Land + Lakes Landfill

SITE SAFETY OFFICER Cliff Florczak

WEEK OF May 6th

NAME AND
DOSIM. #

MONDAY TUESDAY WEDNESDAY THURSDAY FRIDAY SATURDAY SUNDAY

Greg Youngstrom # 290							
Cliff Florczak # 188							
Pat Muldowney # 332							
Addison Crag-Chaderton # 321							
Mark Wheeler # 352							
Bob Cuengros # 355							
Debbie Hallock # 293							

To the nearest half-hour, record time spent downrange as "S" (e.g., S:2.5hrs), time spent in active PDS operation as "P", and any time spent downrange in rescue activity as "R".

HS005(2/24/89)

S. Zimmerman

INSTRUMENTATION	No.	DECON EQUIPMENT	No.
OVA	1	WASH TUBS	2
THERMAL DESORBER		BUCKETS	2
O2/EXPLOSIMETER W/CAL. KIT	1	SCRUB BRUSHES	2
PHOTOVAC TIP		PRESSURIZED SPRAYER	
HNu (Probe 10.2 OR 11.7)	1	DETERGENT (Type Alconox)	2
MAGNETOMETER		SOLVENT (Type)	
PIPE LOCATOR		PLASTIC SHEETING	1
WEATHER STATION		TARPS AND POLES	
DRAEGER PUMP, TUBES		TRASH BAGS	✓
BRUNTON COMPASS		TRASH CANS	
MONITOX CYANIDE	1	MASKING TAPE	✓
HEAT STRESS MONITOR		DUCT TAPE	✓
NOISE EQUIPMENT		PAPER TOWELS	✓
PERSONAL SAMPLING PUMPS (Type)		FACE MASK SANITIZER	✓
DUST MONITOR (MDA OR GCA System)		FOLDING CHAIRS	
		STEP LADDERS	
RADIATION EQUIPMENT		DISTILLED WATER	✓
TLD BADGES	✓		
DOCUMENTATION FORMS			
PORTABLE RATEMETER			
SCALER/RATEMETER		SAMPLING EQUIPMENT	
NaI Probe		80 OZ. AMBER GLASS BOTTLES	20
ZnS Probe		1 L. AMBER GLASS BOTTLES	30
GM Pancake Probe		40 ML. VIALS	30
GM Side Window Probe		1 L. PLASTIC	24
MICRO R METER (RAD-MINI)	✓	8 OZ. GLASS	22
ION CHAMBER		120 ML. GLASS	22
ALERT DOSIMETER		SPOONS	
POCKET DOSIMETER		KNIVES	
		FILTER PAPER	
FIRST AID EQUIPMENT		PERSONAL SAMPLING PUMP SUPPLIES	
FIRST AID KIT	✓	BUCK CALIBRATOR	
OXYGEN ADMINISTRATOR		HAND BAILERS	
STRETCHER		THIEVING RODS WITH BULBS	
PORTABLE EYE WASH	✓	DIOXIN SAMPLE KIT	
BLOOD PRESSURE MONITOR		PRESERVATIVES: HNO3 NaOH Other	
FIRE EXTINGUISHER	✓	STRING	

VAN EQUIPMENT	No.	MISCELLANEOUS (Cont.)	No.
TOOL KIT	✓	HEARING PROTECTION	6
HYDRAULIC JACK	✓	LIFE VESTS	
LUG WRENCH	✓	WALKIE-TALKIE IF Available	2
TOW CHAIN		CONDUCTIVITY METER	1
VAN CHECK OUT		PH METER	1
Gas		CAMERA	1
Oil		WATER-LEVEL INDICATOR	
Antifreeze		SPLIT SPOON SAMPLERS	
Battery		PVC HAND PUMP	
Windshield Wash		RESISTIVITY METER	
Tire Pressure		WELL POINT SAMPLER	
		ROBAIR PUMP SYSTEM	
MISCELLANEOUS		THERMOMETER	1
CHALK	1 box	MASTERFLEX PUMP & FILTER APPARATUS	✓
LEVEL/TRIPOD AND ROD		SHIPPING EQUIPMENT	
BOWLS	5	COOLERS 4 M 3 L	✓
PITCHER PUMP		PAINT CANS WITH LIDS, 7 CLIPS EACH	
SURVEYOR'S TAPE measuring	1	VERMICULITE	✓
100 FIBERGLASS TAPE		DUST MASK	4
300 NYLON ROPE	✓	SHIPPING LABELS	
NYLON STRING		DOT LABELS: "DANGER"	
SURVEYING FLAGS		"UP"	
FILM	3 boxes	"INSIDE CONTAINER COMPLIES ..."	
WHEEL BARROW		"HAZARD GROUP"	
BUNG WRENCH		STRAPPING TAPE	✓
SOIL AUGER	✓	BOTTLE LABELS	✓
PICK		BAGGIES	✓
SHOVEL	2	CUSTODY SEALS	✓
CATALYTIC HEATER		CHAIN-OF-CUSTODY FORMS	✓
PROPANE GAS		FEDERAL EXPRESS FORMS	✓
BANNER TAPE		CLEAR PACKING TAPE	✓
SURVEYING METER STICK			
CHAINING PINS & RING			
TABLES			
WEATHER RADIO			
BINOCULARS			
MEGAPHONE			

ON-SITE SAFETY MEETING

Project Land + Lakes LandfillTDO/PA F05-9006-002/FILO453A

Date _____

Time _____

Job No. FT1305

Address _____

Specific Location _____

Type of Work _____

SAFETY TOPICS PRESENTED

Protective Clothing/Equipment _____

Chemical Hazards _____

Radiation Hazards _____

Physical Hazards _____

Emergency Procedures _____

Hospital/Clinic _____

Telephone _____

Hospital Address _____

Special Equipment _____

Other _____

Checklist

1. Emergency information reviewed? _____ and made familiar to all team members? _____
2. Route to nearest hospital driven? _____ and its location known to all team members? _____
3. Site safety plan readily available and its location known to all team members? _____

Meeting shall be attended by all personnel who will be working within the exclusion area. Daily informal update meetings will be held when site tasks and/or conditions change.

ATTENDEES

(Expand on back of sheet if necessary)

Name Printed	Signature

Meeting Conducted by: _____

(Print)

(Signature)

(Site Safety Coordinator)

(Team Leader)

ECOLOGY AND ENVIRONMENT, INC. - CHICAGO
ON-SITE SAFETY LOG

Name: Land + Lakes Landfill
Date: _____

PAN #/Job #: FIL0452SA/FT1305
Weather _____

	Equipment (Circle All Used)	ID#	Calibration/ Operation Check	Initials and Date	Background Readings	On-Site Readings
1.	OVA	_____	_____	_____	_____	_____
	HNu	_____	_____	_____	_____	_____
	Photovac Tip	_____	_____	_____	_____	_____
2.	O ₂ Meter	_____	_____	_____	_____	_____
	Explosimeter	_____	_____	_____	_____	_____
	Combo Meter	_____	_____	_____	_____	_____
3.	Rad-Mini	_____	_____	_____	_____	_____
	Monitor 4	_____	_____	_____	_____	_____
4.	HCN Draeger	_____	_____	_____	_____	_____
	Monitox	_____	_____	_____	_____	_____
5.	Other:	_____	_____	_____	_____	_____

Attendees At Site: _____

Protective Clothing Worn: _____

Comments on Monitoring or Protective Clothing: _____

Team Leader	_____	_____
	Name	Signature/Date
Site Safety Officer	_____	_____
	Name	Signature/Date

Please submit original to Laura Evans, and a copy to the project file.

Vehicle Safety Checklist
Ecology & Environment, Inc.
Chicago Office

Date: _____ Time: _____ Odometer: _____
Vehicle Model: _____ Color: _____ License Plate No. _____

INTERIOR:

_____ All Safety Belts-Proper Locking
_____ Parking Brake

START ENGINE:

_____ Oil Pressure
_____ Instrument Panel
_____ (Warning Lights or Buzzers)
_____ Horn
_____ Windshield Wiper & Washer
_____ Heater/Defroster
_____ Mirrors
_____ Steering (Loose)
_____ Interior Lights
_____ Emergency Flashers
_____ Starts Properly

FRONT:

_____ Headlights (Dim/Bright)
_____ Turn Signals
_____ Emergency Flashers

REAR:

_____ Tail Lights
_____ Brake Lights
_____ Back up Lights
_____ Turn Signals
_____ Emergency Flashers

MECHANICAL OPERATION:

_____ Engine (misses, knocks, etc.)
_____ Check Oil
_____ Water/Anti-freeze
_____ Wiper Fluid
_____ Brake Fluid

OUTSIDE:

_____ Tires (properly inflated)
_____ Gas Tank Cap

EMERGENCY EQUIPMENT:

_____ Fire Extinguisher
_____ First Aid Kit
_____ Flags, Flares,
_____ Spare tire (properly inflated)
_____ Tire Changing Kit
_____ (jack, tools, etc.)

REMARKS:

TEAM MEMBER/OPERATOR: _____

(print name)

signature

SITE NAME/ADDRESS: Land+Lakes Landfill, Joliet Rd, Lemont, IL, 60439

PAN/JOB NUMBER: FIL0452SA/FT1305

RETURN OF VEHICLE TO DUTY STATION

Vehicle Cleanliness: _____

Remarks: _____

Corrections Necessary: _____

TEAM MEMBER/OPERATOR: _____

(print name)

signature

Date: _____ Time: _____ Odometer: _____

PROPER PAGE ORDER FOR SITE SAFETY PLAN

~~A.~~ General Information / ~~B.~~ Site/Waste Characteristics Page

~~C.~~ Hazard Evaluation Page

~~Site History (Cont) (If Needed)~~

~~Hazard Evaluation (Cont) (If Needed)~~

~~D.~~ Site Safety Work Plan Page

~~Site Map~~

~~Decon / Team Members Page~~

~~E.~~ Emergency Information Page

~~MedTox Hotline~~

~~Hospital Route Map~~

~~Hazard Evaluation Sheets / CHRIS Sheets (Alphabetized)~~

~~Sigma-Aldrich (Spill/Leak, Waste Disposal)~~

~~Site Dosimeter Log~~

~~Equipment Checklist (3 Pages)~~

~~On-Site Safety Meeting~~

~~On-Site Safety Log~~

~~Vehicle Safety Checklist~~